US009106846B2

(12) **United States Patent**
Furuta

(10) **Patent No.: US 9,106,846 B2**
(45) **Date of Patent: *Aug. 11, 2015**

(54) **COMMUNICATION SYSTEMS, COMMUNICATION APPARATUS, AND IMAGE PROCESSOR**

(75) Inventor: **Taku Furuta**, Nagoya (JP)

(73) Assignee: **Brother Kogyo Kabushiki Kaisha**, Nagoya-shi, Aichi-ken (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 223 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **13/348,519**

(22) Filed: **Jan. 11, 2012**

(65) **Prior Publication Data**

US 2012/0176646 A1 Jul. 12, 2012

(30) **Foreign Application Priority Data**

Jan. 11, 2011 (JP) 2011-003351

(51) **Int. Cl.**

G06F 3/12	(2006.01)
H04N 1/32	(2006.01)
H04N 1/00	(2006.01)

(52) **U.S. Cl.**

CPC ***H04N 1/32128*** (2013.01); *H04N 1/00281* (2013.01); *H04N 2201/001* (2013.01); *H04N 2201/0094* (2013.01); *H04N 2201/3205* (2013.01); *H04N 2201/3214* (2013.01); *H04N 2201/3215* (2013.01); *H04N 2201/3232* (2013.01); *H04N 2201/3278* (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2002/0191228	A1	12/2002	Ishibashi	
2004/0024829	A1 *	2/2004	Tanimoto	709/206
2006/0087690	A1 *	4/2006	Park et al.	358/1.15
2007/0035781	A1 *	2/2007	Maruyama	358/405
2008/0151316	A1 *	6/2008	Yoshida	358/402
2008/0259385	A1 *	10/2008	Uruma	358/1.15

(Continued)

FOREIGN PATENT DOCUMENTS

JP	S62-230153	A	10/1987
JP	S63-043464	A	2/1988

(Continued)

OTHER PUBLICATIONS

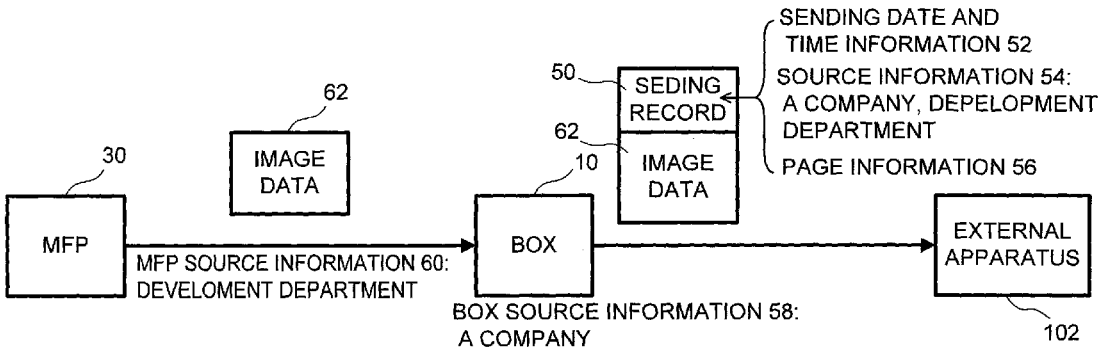
Japan Patent Office, Notice of Reasons for Rejection for Japanese Patent Application No. 2011-003351 (counterpart Japanese patent application), mailed Dec. 25, 2012.

Primary Examiner — Fred Guillermety
Assistant Examiner — Henok A Shiferaw
(74) *Attorney, Agent, or Firm* — Baker Botts L.L.P.

(57) **ABSTRACT**

A communication system including a communication apparatus that communicates with a destination apparatus, and an image processor that connects to the communication apparatus. The image processor includes a supplying unit that supplies image data to the communication apparatus, and a notifying unit that transmits first additional information to the communication apparatus. The communication apparatus includes a memory that stores second additional information, a information generator that generates third additional information based on the second additional information stored in the memory and the first additional information received from the image processor, and a transmitter that adds the third additional information generated by the information generator to the image data supplied from the image processor and transmits the image data including the third additional information to the destination apparatus.

22 Claims, 7 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

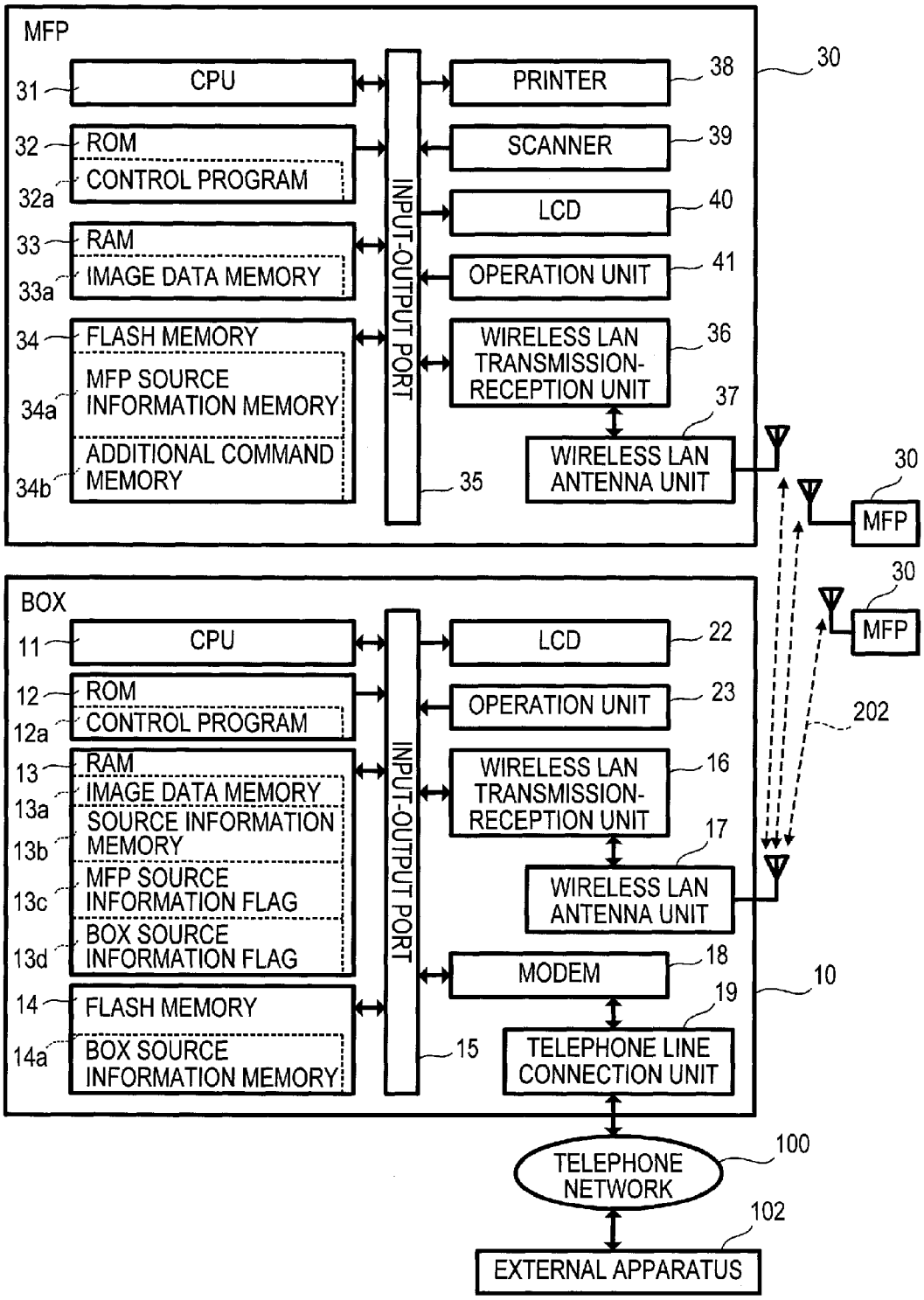
2009/0313240	A1*	12/2009	Gile et al.	707/5
2010/0245904	A1*	9/2010	Nishiyama et al.	358/1.15
2011/0128962	A1*	6/2011	Hunkeler et al.	370/393
2012/0200876	A1	8/2012	Furuta	

FOREIGN PATENT DOCUMENTS

JP	S63-258155	A	10/1988
JP	H04-074055	A	3/1992
JP	H04-107061	A	4/1992
JP	H05-276294	A	10/1993
JP	H06-030163	A	2/1994
JP	H09-093373	A	4/1997
JP	H09-261377	A	10/1997
JP	H11-205564	A	7/1999
JP	H11-252304	A	9/1999
JP	2001-045190	A	2/2001
JP	2002-094728	A	3/2002

* cited by examiner

Fig.1


MFP
CPU
31
ROM
32
CONTROL PROGRAM
32a
RAM
33
IMAGE DATA MEMORY
33a
FLASH MEMORY
34
MFP SOURCE INFORMATION MEMORY
34a
ADDITIONAL COMMAND MEMORY
34b
INPUT-OUTPUT PORT
35
PRINTER
38
SCANNER
39
LCD
40
OPERATION UNIT
41
WIRELESS LAN TRANSMISSION-RECEPTION UNIT
36
WIRELESS LAN ANTENNA UNIT
37
30
MFP
30
MFP
202
BOX
CPU
11
ROM
12
CONTROL PROGRAM
12a
RAM
13
IMAGE DATA MEMORY
13a
SOURCE INFORMATION MEMORY
13b
MFP SOURCE INFORMATION FLAG
13c
BOX SOURCE INFORMATION FLAG
13d
FLASH MEMORY
14
BOX SOURCE INFORMATION MEMORY
14a
INPUT-OUTPUT PORT
15
LCD
22
OPERATION UNIT
23
WIRELESS LAN TRANSMISSION-RECEPTION UNIT
16
WIRELESS LAN ANTENNA UNIT
17
MODEM
18
TELEPHONE LINE CONNECTION UNIT
19
10
TELEPHONE NETWORK
100
EXTERNAL APPARATUS
102

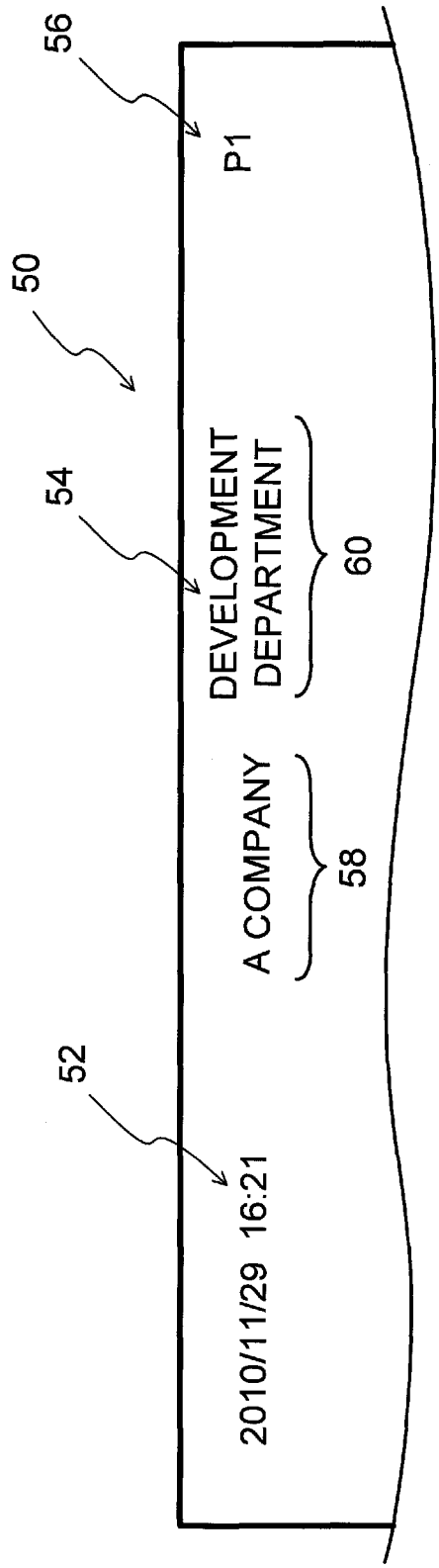

56
P1
50
54
DEVELOPMENT DEPARTMENT
60
A COMPANY
58
52
2010/11/29 16:21

Fig.2A

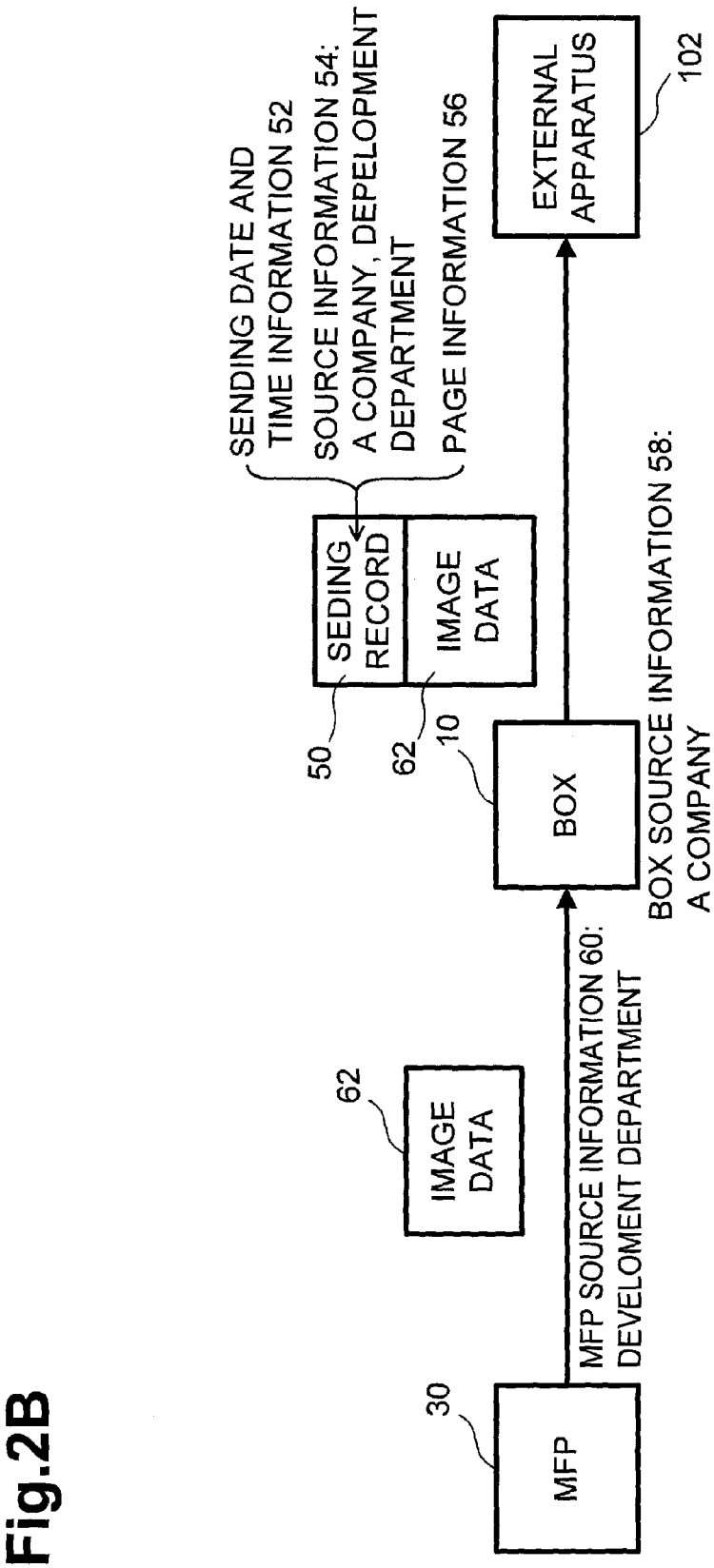

MFP
30
MFP SOURCE INFORMATION 60:
DEVELOMENT DEPARTMENT
IMAGE DATA
62
BOX
10
BOX SOURCE INFORMATION 58:
A COMPANY
SEDING RECORD
IMAGE DATA
50
62
SENDING DATE AND TIME INFORMATION 52
SOURCE INFORMATION 54: A COMPANY, DEPELOPMENT DEPARTMENT
PAGE INFORMATION 56
EXTERNAL APPARATUS
102

Fig.2B

Fig.3

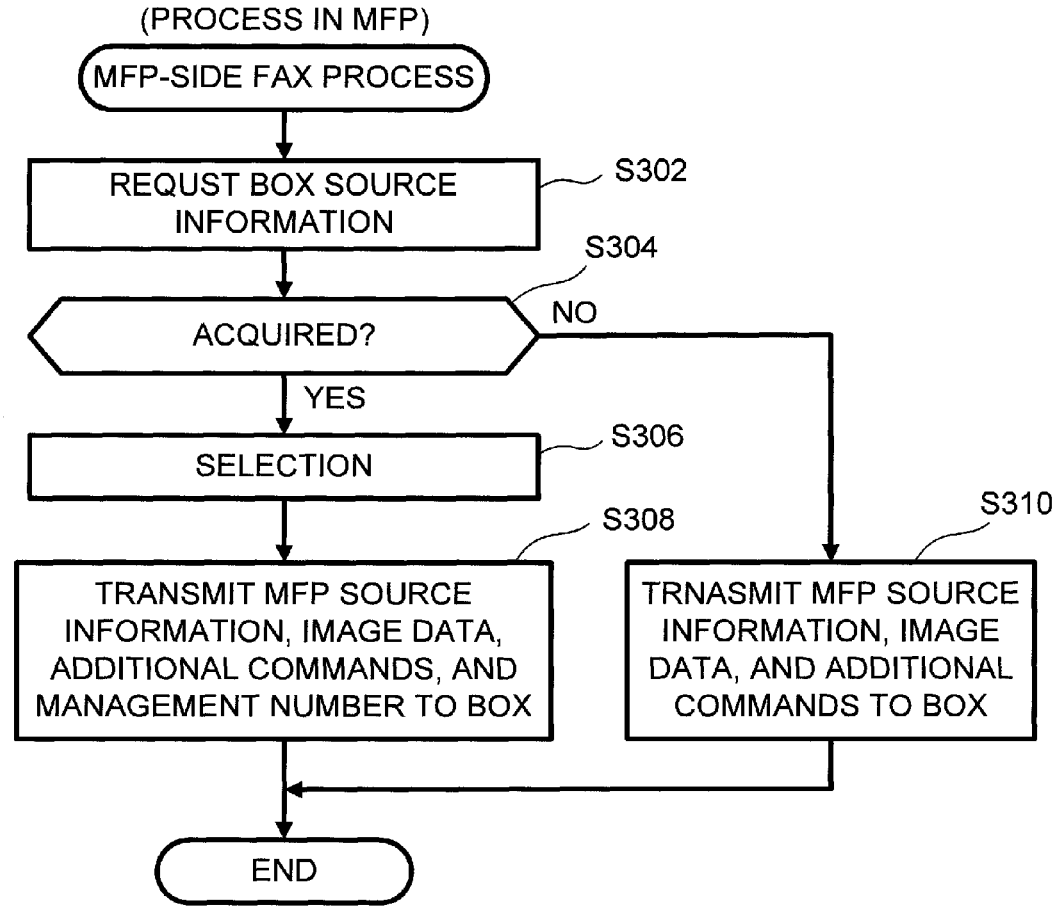

(PROCESS IN MFP)
MFP-SIDE FAX PROCESS
REQUST BOX SOURCE INFORMATION
S302
S304
ACQUIRED?
NO
YES
SELECTION
S306
S308
S310
TRANSMIT MFP SOURCE INFORMATION, IMAGE DATA, ADDITIONAL COMMANDS, AND MANAGEMENT NUMBER TO BOX
TRNASMIT MFP SOURCE INFORMATION, IMAGE DATA, AND ADDITIONAL COMMANDS TO BOX
END

Fig.4

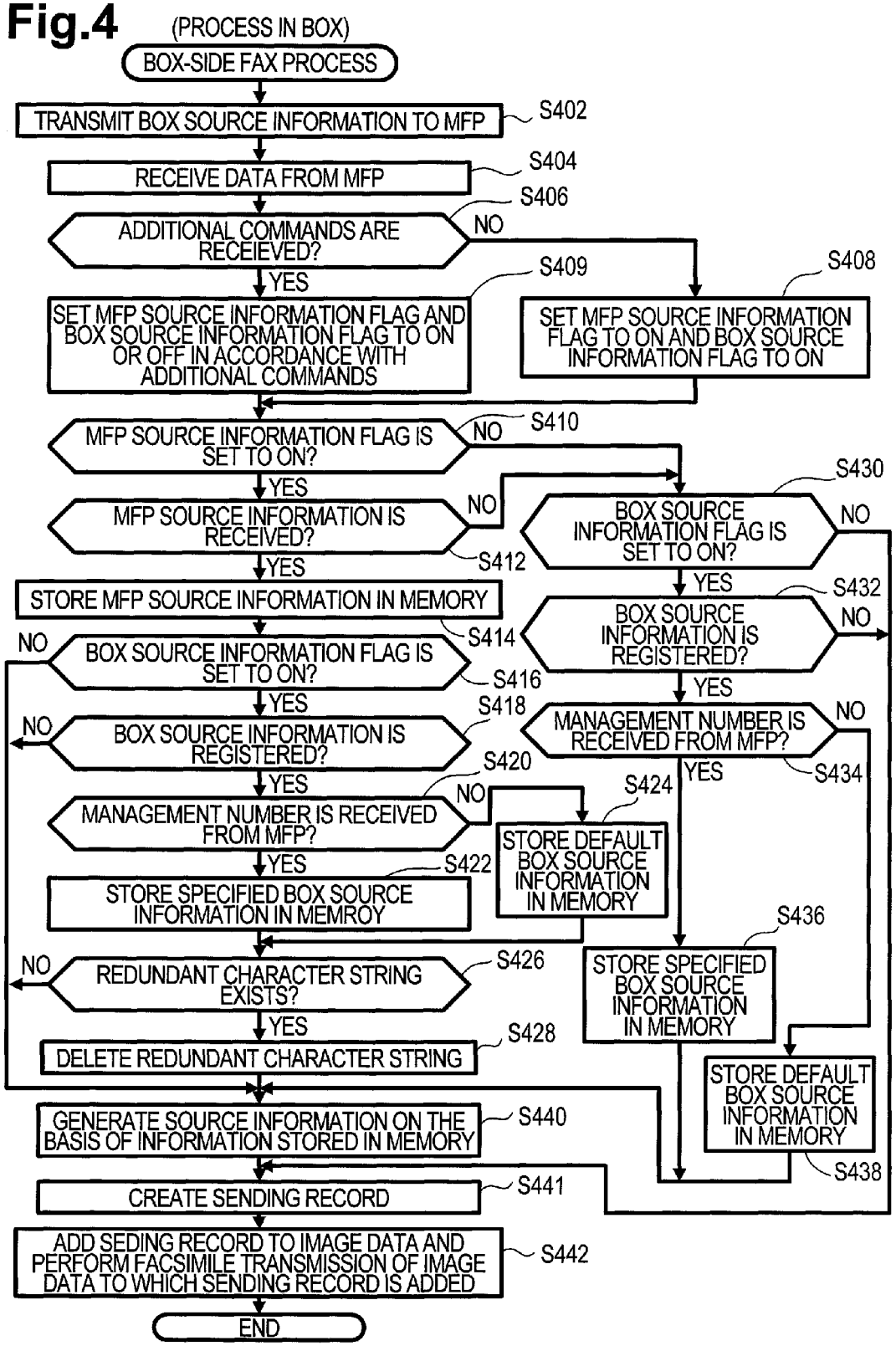

(PROCESS IN BOX)
BOX-SIDE FAX PROCESS
TRANSMIT BOX SOURCE INFORMATION TO MFP
S402
RECEIVE DATA FROM MFP
S404
ADDITIONAL COMMANDS ARE RECEIEVED?
S406
NO
YES
SET MFP SOURCE INFORMATION FLAG AND BOX SOURCE INFORMATION FLAG TO ON OR OFF IN ACCORDANCE WITH ADDITIONAL COMMANDS
S409
SET MFP SOURCE INFORMATION FLAG TO ON AND BOX SOURCE INFORMATION FLAG TO ON
S408
MFP SOURCE INFORMATION FLAG IS SET TO ON?
S410
NO
YES
MFP SOURCE INFORMATION IS RECEIVED?
NO
S412
YES
STORE MFP SOURCE INFORMATION IN MEMORY
S414
NO
BOX SOURCE INFORMATION FLAG IS SET TO ON?
S416
YES
NO
BOX SOURCE INFORMATION IS REGISTERED?
S418
YES
MANAGEMENT NUMBER IS RECEIVED FROM MFP?
S420
NO
YES
STORE DEFAULT BOX SOURCE INFORMATION IN MEMORY
S424
STORE SPECIFIED BOX SOURCE INFORMATION IN MEMROY
S422
NO
REDUNDANT CHARACTER STRING EXISTS?
S426
YES
DELETE REDUNDANT CHARACTER STRING
S428
GENERATE SOURCE INFORMATION ON THE BASIS OF INFORMATION STORED IN MEMORY
S440
CREATE SENDING RECORD
S441
ADD SEDING RECORD TO IMAGE DATA AND PERFORM FACSIMILE TRANSMISSION OF IMAGE DATA TO WHICH SENDING RECORD IS ADDED
S442
END
S430
BOX SOURCE INFORMATION FLAG IS SET TO ON?
NO
YES
S432
BOX SOURCE INFORMATION IS REGISTERED?
NO
YES
MANAGEMENT NUMBER IS RECEIVED FROM MFP?
NO
S434
YES
S436
STORE SPECIFIED BOX SOURCE INFORMATION IN MEMORY
STORE DEFAULT BOX SOURCE INFORMATION IN MEMORY
S438

Fig.5A

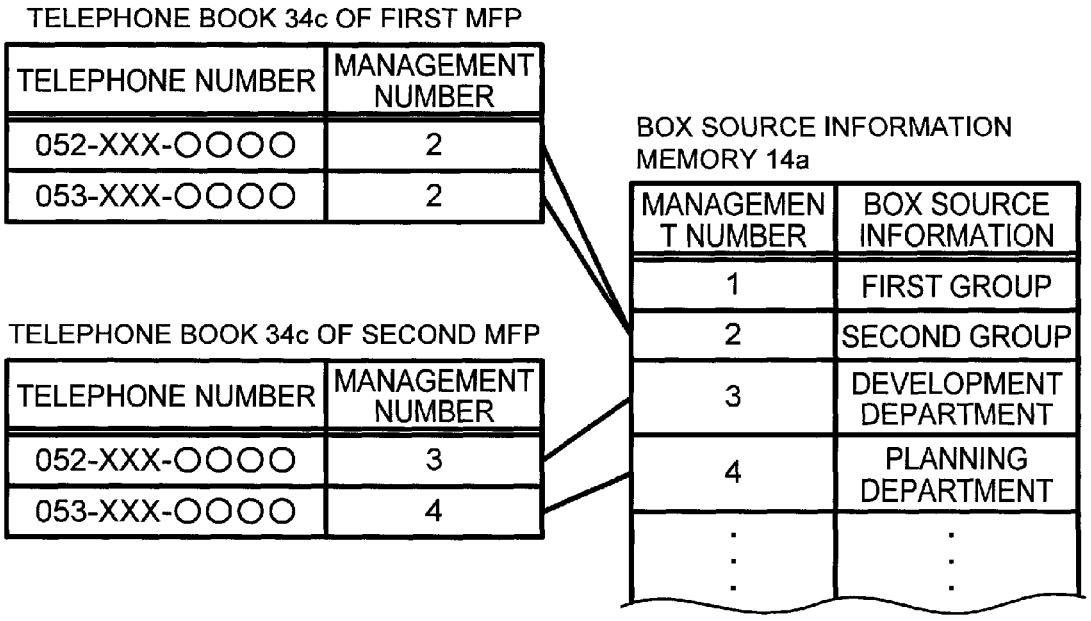
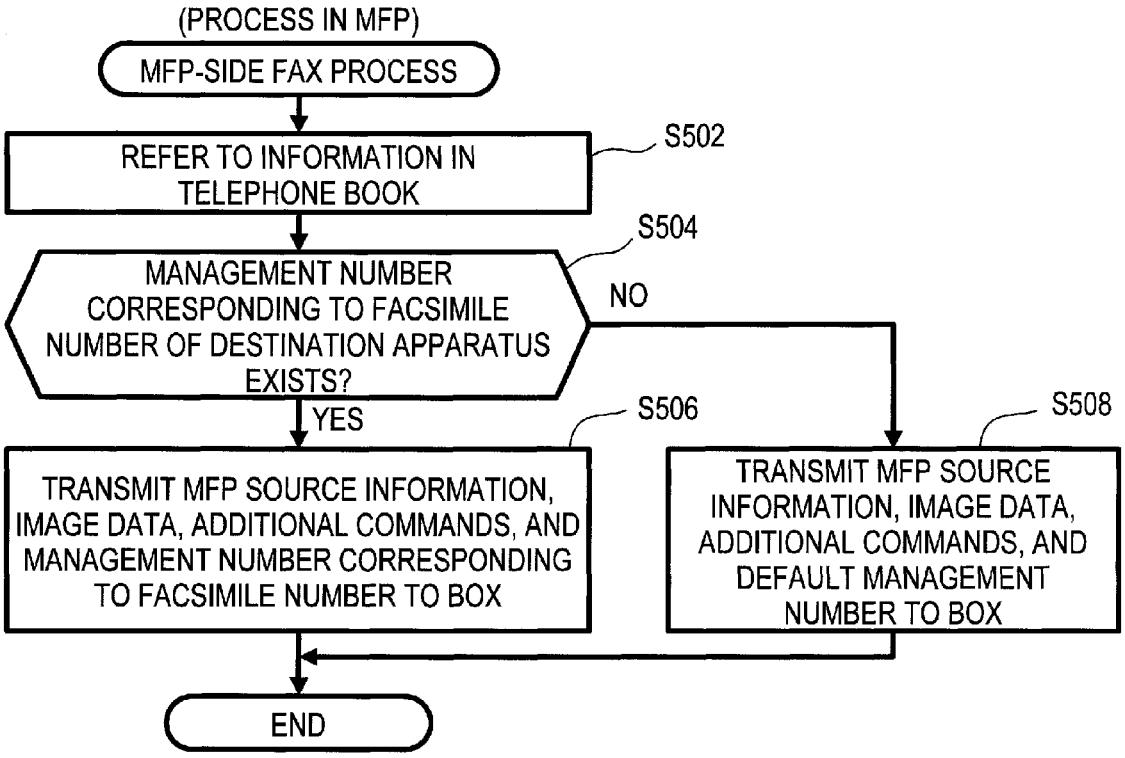

TELEPHONE BOOK 34c OF FIRST MFP
TELEPHONE NUMBER
MANAGEMENT NUMBER
052-XXX-OOOO
2
053-XXX-OOOO
2
TELEPHONE BOOK 34c OF SECOND MFP
TELEPHONE NUMBER
MANAGEMENT NUMBER
052-XXX-OOOO
3
053-XXX-OOOO
4
BOX SOURCE INFORMATION MEMORY 14a
MANAGEMENT NUMBER
BOX SOURCE INFORMATION
1
FIRST GROUP
2
SECOND GROUP
3
DEVELOPMENT DEPARTMENT
4
PLANNING DEPARTMENT

Fig.5B


(PROCESS IN MFP)
MFP-SIDE FAX PROCESS
REFER TO INFORMATION IN TELEPHONE BOOK
S502
MANAGEMENT NUMBER CORRESPONDING TO FACSIMILE NUMBER OF DESTINATION APPARATUS EXISTS?
S504
NO
YES
TRANSMIT MFP SOURCE INFORMATION, IMAGE DATA, ADDITIONAL COMMANDS, AND MANAGEMENT NUMBER CORRESPONDING TO FACSIMILE NUMBER TO BOX
S506
TRANSMIT MFP SOURCE INFORMATION, IMAGE DATA, ADDITIONAL COMMANDS, AND DEFAULT MANAGEMENT NUMBER TO BOX
S508
END

COMMUNICATION SYSTEMS, COMMUNICATION APPARATUS, AND IMAGE PROCESSOR

CROSS REFERENCE TO RELATED APPLICATION

This application claims priority from Japanese Patent Application No. 2011-003351, filed on Jan. 11, 2011, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE DISCLOSURE

1. Field of the Invention

The invention relates generally to communication systems, communication apparatus, and image processor.

2. Description of Related Art

In a known method, as described in Japanese Unexamined Patent Application Publication No. H09-261377, header information including a sender name may be added to an upper part of each page of a transmission document. In a known client-server system, as described in Japanese Unexamined Patent Application Publication No. H11-252304, a data processing apparatus of a client may perform facsimile communication via a facsimile server. In the known method, source information registered in the facsimile server may be added to facsimile data, and the facsimile data, to which the source information is added, may be transmitted. In known methods and systems, users may be required to register and to update the source information, which is tedious to the users.

SUMMARY OF THE DISCLOSURE

According to an embodiment of the invention, communication systems, communication apparatus, and image processor may be configured to add appropriate additional information to image data and to transmit the image data, to which the appropriate additional information is added, to a destination apparatus.

According to an embodiment of the present invention, a communication system comprising: a communication apparatus configured to communicate with a destination apparatus; and an image processor configured to connect to the communication apparatus, wherein the image processor comprises: a supplying unit configured to supply image data to the communication apparatus; and a notifying unit configured to transmit first additional information to the communication apparatus, and wherein the communication apparatus comprises: a memory configured to store second additional information; a information generator configured to generate third additional information based on the second additional information stored in the memory and the first additional information received from the image processor; and a transmitter configured to add the third additional information generated by the information generator to the image data supplied from the image processor and transmit the image data including the third additional information to the destination apparatus.

According to another embodiment of the present invention, a communication apparatus configured to communicate with a destination apparatus, the communication apparatus comprising: an image data acquiring unit configured to acquire image data supplied from an image processor; an additional information acquiring unit configured to acquire first additional information from the image processor; a memory configured to store second additional information; a information generator configured to generate third additional information based on the second additional information stored in the memory and the first additional information acquired by the additional information acquiring unit; and a transmitter configured to add the third additional information generated by the information generator to the image data acquired by the image data acquiring unit and transmit the image data including the third additional information to the destination apparatus.

According to still another embodiment of the invention, an image processor configured to connect to a communication apparatus that communicates with a destination apparatus, the image processor comprising: a supplying unit configured to supply image data to the communication apparatus; a notifying unit configured to transmit first additional information to the communication apparatus; and a requesting unit configured to request the communication apparatus to: add third additional information generated based on the first additional information transmitted from the image processor and second additional information stored in a memory of the communication apparatus to the image data, and transmit the image data including the third additional information from the communication apparatus to the destination apparatus.

Other objects, features, and advantages of an embodiment of the invention will be apparent to persons of ordinary skill in the art from the following description of an embodiment with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, needs satisfied thereby, and the objects, features, and advantages thereof, reference now is made to the following descriptions taken in connection with the accompanying drawings.

FIG. **1** is a block diagram depicting an electrical configuration of a communication system according to an embodiment of the invention.

FIG. **2**A depicts an example of a sending record to be added to facsimile data according to an embodiment of the invention.

FIG. **2**B depicts a process of generating source information according to an embodiment of the invention.

FIG. **3** is a flow chart depicting an MFP-side FAX process executed by a CPU in an MFP according to an embodiment of the invention.

FIG. **4** is a flow chart depicting a BOX-side FAX process executed by a CPU in a BOX according to an embodiment of the invention.

FIG. **5**A schematically depicts the correspondence between a BOX source information memory provided in a BOX and digital telephone directory provided in an MFP according to a second embodiment of the invention.

FIG. **5**B is a flow chart depicting an MFP-side FAX process executed by a CPU in the MFP of the second embodiment of the invention.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

For a more complete understanding of the present invention, needs satisfied thereby, and the objects, features, and advantages thereof, reference now is made to the following description taken in connection with the accompanying drawings.

Embodiments of the invention will herein be described with reference to the attached drawings. FIG. **1** is a block diagram depicting an electrical configuration of a communication system **1** including a communication apparatus, e.g., a

line control apparatus (hereinafter referred to as "BOX") **10**, and an image processor, e.g., a multifunctional peripheral ("MFP") **30**. Communication system **1** may be configured to add appropriate source information to image data and transmit the image data, to which the source information is added, to a destination apparatus.

BOX **10** may perform communication with a destination apparatus, e.g., an external apparatus **102**, over a telephone network **100**. BOX **10** may comprise a central processing unit ("CPU") **11**, a read only memory ("ROM") **12**, a random access memory ("RAM") **13**, a flash memory **14**, a wireless local area network ("LAN") transmission-reception unit **16**, a wireless LAN antenna unit **17**, a modem **18**, a telephone line connection unit **19**, a liquid crystal display ("LCD") **22**, and an operation unit **23**. These components may be connected to each other, such that they communicate via an input-output port **15**.

CPU **11** may control the components connected to input-output port **15** in accordance with fixed values and/or programs stored in ROM **12**, or various signals transmitted and received by wireless communication **202**. ROM **12** may be a non-rewritable memory and may store a control program **12***a* for executing a process, e.g., a process depicted in FIG. **4**. RAM **13** may be a rewritable volatile memory and may comprise an image data memory **13***a*, a source information memory **13***b*, an MFP source information flag **13***c*, and a BOX source information flag **13***d*.

Image data memory **13***a* may store image data supplied from MFP **30**. Source information memory **13***b* may store source information to be added to the header of the image data, which may be stored in image data memory **13***a*. MFP source information flag **13***c* may indicate whether MFP source information received from MFP **30** to BOX **10** is included in the source information added to the header of the image data. BOX source information flag **13***d* may indicate whether BOX source information registered, e.g., stored, in BOX **10** is included in the source information added to the header of the image data.

Flash memory **14** may be a rewritable non-volatile memory and may include a BOX source information memory **14***a*. BOX source information set by the user may be registered in BOX source information memory **14***a*.

Wireless LAN transmission-reception unit **16** may be a circuit that performs the wireless communication **202** over a wireless LAN conforming to Institute of Electrical and Electronic Engineers (IEEE) 802.11b/g. BOX **10** may communicate with MFP **30** by wireless LAN antenna unit **17** and wireless LAN transmission-reception unit **16**. Modem **18** may modulate image data for facsimile transmission into a signal compatible for transmission to telephone network **100**. Telephone line connection unit **19** may transmit the modulated image data to telephone network **100**. Telephone line connection unit **19** may receive a signal from telephone network **100**. Modem **18** may demodulate the signal received from telephone network **100** into image data. Telephone line connection unit **19** may connect telephone network **100** with BOX **10**. Telephone line connection unit **19** may selectively connect and disconnect the telephone line in response to an instruction from modem **18** that controls the connection status with external apparatus **102**. LCD **22** may display messages for guiding a method of operating BOX **10**. Operation unit **23** may comprise keys configured to receive setting values and instructions for operating BOX **10**.

BOX **10** may transmit and receive the image data via telephone network **100** in G3FAX standard. In another embodiment, BOX **10** may transmit and receive the image data according to another standard, e.g., G4FAX, IPFAX, or InternetFAX.

MFP **30** may perform a plurality of functions, e.g., one or more of a printer function, a scanner function, and a copy function. MFP **30** may comprise a CPU **31**, a ROM **32**, a RAM **33**, a flash memory **34**, a wireless LAN transmission-reception unit **36**, a wireless LAN antenna unit **37**, a printer **38**, a scanner **39**, an LCD **40**, and an operation unit **41**. These components may be connected to each other and may communicate with each other via an input-output port **35**.

CPU **31** may control the components connected to input-output port **35** in accordance with fixed values and/or programs stored in ROM **32** or various signals transmitted and received by wireless communication **202**. ROM **32** may be a non-rewritable memory and may store a control program **32***a* for executing a process, e.g., a process depicted in FIG. **3**. RAM **33** may be a rewritable volatile memory and may include an image data memory **33***a*. Image data generated by scanner **39** may be stored in image data memory **33***a*. MFP **30** may supply the image data stored in image data memory **33***a* to BOX **10**.

Flash memory **34** may be a rewritable non-volatile memory and may include a MFP source information memory **34***a* and an additional command memory **34***b*. MFP source information set by the user of MFP **30** may be stored in MFP source information memory **34***a*.

Additional command memory **34***b* may store additional commands indicating settings selected by the user. The additional commands may include a first additional command indicating whether the MFP source information is included in the header of the image data and a second additional command indicating whether the BOX source information is included in the header of the image data. The additional commands may be set by the user with operation unit **41** in MFP **30**.

Wireless LAN transmission-reception unit **36** may be a circuit configured in the same manner as in wireless LAN transmission-reception unit **16** in BOX **10** and establish wireless communication **202** with BOX **10**. Printer **38** may form an image on a sheet of paper. Scanner **39** may scan a document to generate image data. LCD **40** may display, for example, operational processes of MFP **30**, a variety of information, and messages. Operation unit **41** may include keys used to input setting values and instructions into MFP **30**. Even though one multiple MFP **30** is described herein, a plurality of MFP's **30** may be connected to BOX **10** in the communication system **1**.

FIG. **2**A depicts an example of a sending record **50** to be added to the header of image data for facsimile transmission. The sending record **50** may comprise sending date and time information **52**, source information **54**, and page information **56**. When the image data is received and printed out at external apparatus **102**, a recipient may view the sending information of the sending record **50** included in the header of the image data.

The sending date and time information **52** may indicate a date and time when the facsimile transmission is performed and may be added to the header of the image data in BOX **10**. The source information **54** may indicate the source of the image data and may include second additional information, e.g., BOX source information **58**, and first additional information, e.g., MFP source information **60**.

The page information **56** may indicate the page number of the image data to be facsimile transmitted. The sending

record **50** may comprise other information, such as identification information, e.g., facsimile numbers, of communication system **1**.

FIG. **2**B depicts the process of generating the source information **54**. Image data **62** for facsimile transmission may be supplied from MFP **30** to BOX **10**. MFP **30** may notify BOX **10** of the MFP source information **60** preset by the user in MFP **30**. In another embodiment, the BOX source information **58** may be registered at BOX **10**. BOX **10** may generate the source information **54** based on the BOX source information **58** registered at BOX **10** or the MFP source information **60** received from MFP **30**. BOX **10** then may generate the sending record **50** comprising the sending date and time information **52**, the source information **54**, and the page information **56**, and may add the sending record **50** to the header of the image data. BOX **10** may transmit the image data **62** including the sending record **50** to external apparatus **102**, e.g., a destination apparatus.

Accordingly, the appropriate source information **54** may be added to the image data **62** for transmission to the destination apparatus without user input. When a plurality of MFP's **30** are connected to one BOX **10**, a common part, e.g., company name, in the source information **54** may be registered in advance in BOX **10** as the BOX source information **58** and a part, e.g., department name, for each MFP **30** may be set in MFP **30** as the MFP source information **60**. Thus, the source information **54**, e.g., company name plus department name, may indicate which MFP **30** in communication system **1** the image data **62** is sent from based on the BOX source information **58** and the MFP source information **60**.

For example, when adding an MFP **30** to the communication system **1**, a user may set the MFP source information **60** in MFP **30**. The common part, e.g., company name, in the source information **54** may not be registered in the newly added MFP **30**. When the common part, e.g., company name, in the source information **54** is changed, the user may change the BOX source information **58** in BOX **10** without changing the settings for each of the respective MFP's **30**. Accordingly, the amount of work for managing communication system **1** is reduced.

For example, when the MFP source information **60** is frequently changed, e.g., two departments share one MFP **30** in a company, the user may change the setting in the MFP source information **60**, without changing the BOX source information **58**, which is the common part. Accordingly, the source information **54** may be generated and transmitted to the destination apparatus without additional work by the user.

The BOX source information **58** may be listed before the MFP source information **60** in the sending record **50**. Accordingly, information indicating a higher hierarchy in the source information **54**, e.g., company name, may be set as the BOX source information **58** and information indicating a lower hierarchy in the source information **54**, e.g., department name, may be set as the MFP source information **60**, such that the source information **54**, e.g., "A company, development department," in which the information indicating the lower hierarchy is arranged next to the information indicating the higher hierarchy, may be generated.

For example, when one BOX **10** is installed in a home and each member of the family is associated with the MFP **30**, information indicating a higher hierarchy in the source information **54**, e.g., family name, may be set as the BOX source information **58**, and information indicating a lower hierarchy in the source information **54**, e.g., personal name, may be set as the MFP source information **60**, such that the source information **54**, in which the information about the personal name is arranged next to the information about the family name, may be generated.

In the source information **54**, the BOX source information **58** and the MFP source information **60** may be successively arranged, without other information arranged between the BOX source information **58** and the MFP source information **60**. Thus, the BOX source information **58** and the MFP source information **60** may be displayed as integrated information.

FIG. **3** is a flow chart depicting an MFP-side facsimile (FAX) process executed by CPU **31** in MFP **30**. In the MFP-side FAX process, the MFP **30** may transmit the MFP source information **60** and the image data **62** to BOX **10** and may request BOX **10** to generate the source information **54** and to transmit the image data **62** including the source information **54** to the destination apparatus. The image data **62** to be subjected to the facsimile transmission may be generated by the scanner **39** in MFP **30** and may be stored in the image data memory **33***a* before beginning the FMP-side FAX process. MFP **30** may notify BOX **10** of a facsimile number identifying the destination apparatus of the facsimile transmission.

Referring to FIG. **3**, in Step S**302**, CPU **31** may request the BOX source information **58** from BOX **10**. In Step S**304**, CPU **31** may determine whether the BOX source information **58** has been acquired. If the BOX source information **58** has been acquired, e.g., YES at Step S**304**; in S**306**, CPU **31** may display the acquired BOX source information **58** in LCD **40** and may prompt the user to select one piece of the BOX source information **58**. Multiple kinds of BOX source information **58** may have been registered in BOX **10** and specific information for identification, e.g., management number, may be associated with each kind of BOX source information **58**.

In Step S**308**, CPU **31** may transmit the MFP source information **60** set in MFP source information memory **34***a*, the image data **62** stored in image data memory **33***a*, the additional commands stored in additional command memory **34***b*, and the management number corresponding to the BOX source information **58** selected in Step S**306** to BOX **10**.

The additional commands may include the first additional command and the second additional command. The first additional command may selectively be set to ON or OFF to indicate whether the MFP source information **60** is included in the source information **54**. The second additional command may selectively be set to ON or OFF to indicate whether the BOX source information **58** is to be included in the source information **54**. The user of MFP **30** may set the first additional command to OFF and the second additional command to ON to instruct BOX **10** to include only the BOX source information **58**, e.g., company name, in the source information **54**. Similarly, the user of MFP **30** may set the first additional command to ON and the second additional command to OFF to instruct BOX **10** to include only MFP source information **60**, e.g., the name of a person, in the source information **54**.

At Step S**310**, if the BOX source information **58** has not been acquired, e.g., NO at Step S**304**, CPU **31** may transmit the MFP source information **60** stored in MFP source information memory **34***a*, the image data **62** stored in image data memory **33***a*, and the additional commands stored in additional command memory **34***b* to BOX **10**.

FIG. **4** is a flow chart depicting a BOX-side FAX process executed by CPU **11** in BOX **10**. In the BOX-side FAX process, the sending record **50** may be added to the image data **62** received from MFP **30** and the image data **62** to which the sending record **50** is added may be facsimile transmitted to the external apparatus **102**. The BOX-side FAX process may

begin in response to BOX **10** receiving a request for the BOX source information **58** from MFP **30**.

Referring to FIG. **4**, in Step S**402**, CPU **11** may transmit the BOX source information **58** stored in BOX source information memory **14***a* to MFP **30**. In Step S**404**, CPU **11** may receive data transmitted from MFP **30**. The data received in Step S**404** may include the MFP source information **60**, the image data **62**, and the additional commands. If selection of the BOX source information **58** is performed in MFP **30**, the data received in S**404** also may comprise the management number.

In Step S**406**, CPU **11** may determine whether the additional commands are received. If no additional command is received, e.g., NO at Step S**406**, CPU **11** may set MFP source information flag **13***c* and BOX source information flag **13***d* to ON at Step S**408**.

If the additional commands are received, e.g., YES at Step S**406**, CPU **11** may set the status of the first additional command included in the additional commands in MFP source information flag **13***c* and the status of the second additional command included in the additional commands in BOX source information flag **13***d* at Step S**409**.

In S**410**, CPU **11** may determine whether the MFP source information flag **13***c* is set to ON. If MFP source information flag **13***c* is set to ON, e.g., YES at Step S**410**, CPU **11** may determine whether the MFP source information **60** is received from MFP **30** at Step S**412**. If the determination at Step S**412** is affirmative, e.g., YES at Step S**412**, CPU **11** may store the received MFP source information **60** in source information memory **13***b* at Step S**414**.

In Step S**416**, CPU **11** may determine whether BOX source information flag **13***d* is set to ON. If BOX source information flag **13***d* is set to ON, e.g., YES at Step S**416**, CPU **11** may determine whether the BOX source information **58** is registered in BOX source information memory **14***a* at Step S**418**. If the BOX source information **58** is registered, e.g., YES at Step S**418**, CPU **11** may determine whether the management number specifying the BOX source information **58** is received from MFP **30** at Step S**420**.

If the determination in Step S**420** is affirmative, e.g., YES at Step S**420**, CPU **11** may store the BOX source information **58** specified by the management number, e.g., the BOX source information **58** selected by the user of MFP **30**, in source information memory **13** at Step S**422**, If the management number indicating the BOX source information **58** selected by the user of MFP **30** is not provided to BOX **10**, e.g., NO at Step S**420**, CPU **11** may store the BOX source information **58** selected in advance as the default BOX source information **58** in source information memory **13***b* at Step S**424**. When multiple kinds of BOX source information **58** are registered in BOX source information memory **14***a*, the user may select one of the multiple kinds of BOX source information **58** in advance and set the selected BOX source information **58** as the default BOX source information **58**. When only one kind of BOX source information **58** is registered in BOX source information memory **14***a*, CPU **11** may use the corresponding BOX source information **58** as the default BOX source information **58**.

In Step S**426**, CPU **11** may determine whether any character string is redundantly included in the BOX source information **58** and the MFP source information **60** stored in source information memory **13***b*. In the search for any character string that is redundantly included, the MFP source information **60** may be searched from the beginning of the character string and the BOX source information **58** may be searched from the end of the character string in order to increase the processing speed. When the source information indicating the department to which a person belong is hierarchically described, e.g., the BOX source information **58** indicates "A company, development department" and the MFP source information **60** indicates "development department, Smith," any character string may likely be redundantly included at the beginning of the MFP source information **60** and the end of the BOX source information **58**.

If CPU **11** determines that any redundant character string exists, e.g., YES at Step S**426**, CPU **11** may delete the redundant character string from the BOX source information **58** or the MFP source information **60** at Step S**428**. In Step S**440**, CPU **11** may add the MFP source information **60** to the end of the BOX source information **58** to generate the source information **54**. The source information **54**, e.g., "A company, development department, Smith," may be generated in which the redundant part, e.g., "development department," is deleted from the character string, e.g., "A company, development department, development department, Smith," resulted from adding the BOX source information **58** to the MFP source information **60**.

If CPU **11** determines that no redundant character string exists, e.g., NO at Step S**426**, the process may skip Step S**428**, and CPU **11** may combine the BOX source information **58** and the MFP source information **60** to generate the source information **54** at Step S**440**,

If BOX source information flag **13***d* is set to OFF, e.g., NO at Step S**416**, or if the BOX source information **58** is not registered, e.g., NO at Step S**418**, CPU **11** may generate the source information **54** without including the BOX source information **58**, but including the MFP source information **60** based on the MFP source information **60** stored in source information memory **13***b* at Step S**440**.

If MFP source information flag **13***c* is set to OFF, e.g., NO at Step S**410**, or if the MFP source information **60** is not received, e.g., NO at Step S**412**, CPU **11** may determine whether BOX source information flag **13***d* is set to ON at Step S**430**. If BOX source information flag **13***d* is set to ON, e.g., YES at Step S**430**, CPU **11** may determine whether the BOX source information **58** is registered in BOX source information memory **14***a* at Step S**432**. If BOX source information **58** is registered in BOX source information memory **14***a*, e.g., YES at Step S**432**, CPU **11** may determine whether the management number specifying the BOX source information **58** is received from MFP **30** at Step S**434**.

If the determination in Step S**434** is affirmative, e.g., YES at Step S**434**, CPU **11** may store the BOX source information **58** specified by the management number in source information memory **13***b* at Step S**436**. If, however, the determination in S**434** is negative, e.g., NO at Step S**434**, CPU **11** may store the default BOX source information **58** in source information memory **13***b* at Step S**438**.

In Step S**440**, CPU **11** may generate the source information **54** without including the MFP source information **60** but including the BOX source information **58** based on the BOX source information **58** stored in source information memory **13***b*.

If CPU **11** determines that BOX source information flag **13***d* is set to OFF, e.g., NO at Step S**430**, or if CPU **11** determines that the BOX source information **58** is not registered, e.g., NO at Step S**432**, CPU **11** may not generate the source information **54**, and the process may proceed to Step S**441**.

In Step S**441**, CPU **11** may generate the sending record **50** comprising one or more of the sending date and time information **52**, the source information **54**, and the page information **56**. In Step S**442**, CPU **11** may add the generated sending record **50** to the header of the image data **62** and may facsimile

transmit the image data **62** including the sending record **50** to the external apparatus **102** identified as the destination apparatus.

In the BOX-side FAX process, the BOX source information **58** selected by the user at the MFP **30** or the default BOX source information **58** may be included in the source information **54**. Accordingly, the appropriate source information **54** may be generated.

By determining whether the BOX source information **58** exists and whether the MFP source information **60** exists, the source information **54** of three patterns, e.g., a first pattern of the source information **54** that includes both the BOX source information **58** and the MFP source information **60**, a second pattern of the source information **54** that includes the BOX source information **58** without the MFP source information **60**, and a third pattern of the source information **54** that includes the MFP source information **60** without the BOX source information **58**, may be generated from the BOX source information **58** and the MFP source information **60**. Thus, the steps to register these information by the user may be reduced.

For example, a user who has a business at home may switch the source information **54** to selectively transmit personal facsimile and business facsimile. The user may register the company name as the BOX source information **58** and may set the personal name as the MFP source information **60** to switch the source information **54** between the company name, the personal name, and the company name and the personal name.

The BOX source information **58** selected by the user in MFP **30**, among the multiple kinds of BOX source information **58**, may be included in the source information **54**. In a second embodiment, the BOX source information **58** corresponding to the facsimile number of the destination apparatus, among the multiple kinds of BOX source information **58**, may be included in the source information **54**.

FIG. **5**A depicts the correspondence between BOX source information memory **14***a* provided in flash memory **14** in BOX **10** and digital telephone directory **34***c* provided in flash memory **34** in MFP **30** in communication system **1** according to the second embodiment of the invention. Digital telephone directory **34***c* may be provided in a first MFP **30** and digital telephone directory **34***c* may be provided in a second MFP **30**, among the plurality of MFPs **30** included in communication system **1**. As depicted in FIG. **5**A, different pieces of information may be set in digital telephone directory **34***c* in the respective MFP **30**.

The pieces of BOX source information **58** input by the user may be registered in BOX source information memory **14***a* and the management numbers for identification may be allocated to the registered pieces of BOX source information **58**. The facsimile number of each destination apparatus input by the user of the MFP **30** may be registered in each digital telephone directory **34***c*.

MFP **30** may acquire the management numbers and the pieces of BOX source information **58** from BOX **10** and may display the management numbers and the pieces of BOX source information **58** that are acquired in LCD **40** in MFP **30**. The user of MFP **30** may determine the BOX source information **58** to be associated with each facsimile number in each digital telephone directory **34***c*. The user may associate the management number of the BOX source information **58** with the facsimile number, and may set the facsimile number with which the management number of the BOX source information **58** is associated in digital telephone directory **34***c*.

FIG. **5**B is a flow chart depicting an MFP-side FAX process executed by MFP **30** in communication system **1** according to the second embodiment of the invention. The image data **62** to be facsimile transmitted may be stored in image data memory **33***a* before the MFP-side FAX process depicted in FIG. **5**B begins. The MFP **30** may notify BOX **10** of the facsimile number identifying the destination apparatus of the facsimile transmission.

Referring to FIG. **5**B, CPU **31** may refer to digital telephone directory **34***c* at Step S**502**. In Step S**504**, CPU **31** may determine whether a management number is stored in digital telephone directory **34***c* in association with the facsimile number of the destination apparatus to which the image data is to be transmitted. If the determination in S**504** is affirmative, e.g., YES at Step S**504**, CPU **31** may transmit the management number associated with the facsimile number of the destination apparatus to BOX **10**, along with the MFP source information **60**, the image data **62**, and the additional commands, at Step S**506**.

If CPU **31** determines that the management number corresponding to the facsimile number of the destination apparatus, to which the image data is to be transmitted is not stored in digital telephone directory **34***c*, e.g., NO at Step S**504**, CPU **31** may transmit the default management number to BOX **10**, along with the MFP source information **60**, the image data **62**, and the additional commands at Step S**508**. The default management number may be preset by the user for each MFP **30**.

Thus, the source information **54** including the BOX source information **58** corresponding to the facsimile number of the destination apparatus may be generated in the MFP-side FAX process according to the second embodiment of the invention. If the management number corresponding to the facsimile number of the destination apparatus is not stored in digital telephone directory **34***c*, the appropriate source information **54** may be generated based on the preset default management number.

The correspondence between the facsimile number of the destination apparatus and the management number for each MFP **30** may be set. The combination of the destination apparatus and the source information **54** for each MFP **30** may be improved.

MFP **30** may be an example of the image processor. In another embodiment, the image processor may be various other apparatus, including a mobile phone, a personal computer, a digital camera, and the like.

A plurality of MFP's **30** may be connected to one BOX **10** in communication system **1**. In another embodiment, one MFP **30** may be connected to one BOX **10**.

MFP **30** may notify BOX **10** of whether the sending date and time information **52** and the page information **56** are included in the sending record **50**. MFP **30** may notify BOX **10** of the MFP source information **60** preset in MFP **30** in the MFP-side FAX processes. In another embodiment, the user may select the MFP source information **60** to be transmitted to BOX **10** in MFP **30** when multiple kinds of MFP source information **60** are preset in MFP **30**.

MFP **30** may notify BOX **10** of the MFP source information **60** input by the user in MFP **30**, instead of the preset MFP source information **60**. Alternatively, MFP **30** may notify BOX **10** of a user name with which a user logs onto MFP **30** as the MFP source information **60**.

The BOX source information **58** may be listed before the MFP source information **60** in the sending record **50**. In another embodiment, the user may set the arrangement order of the BOX source information **58** and the MFP source information **60**.

When multiple kinds of BOX source information **58** are registered in the BOX source information memory **14***a*, the user may select in advance one of the multiple kinds of BOX

source information **58** as the default BOX source information **58**. In another embodiment, the BOX source information **58** set for each MFP **30** may be selected as the default BOX source information **58**. In this case, if MFP **30** does not notify BOX **10** of the management number, e.g., NO at Step S**420** or NO at Step S**434**, the BOX source information **58** selected in advance for MFP **30**, from which the facsimile transmission request is submitted, may be included in the source information **54** in BOX **10**.

Digital telephone directory **34***c* in which the facsimile number of each destination apparatus may be associated with the management number provided in MFP **30**. In another embodiment, digital telephone directory **34***c* may be provided in BOX **10**. In this case, the facsimile number may be directly associated with the BOX source information.

The various functions may be performed by CPU **31** or CPU **11**. In another embodiment, the various functions may be performed by another processor, e.g., an Application Specific Integrated Circuit ("ASIC"), or a logic circuit.

While the invention has been described connection with various exemplary structures and illustrative embodiments, it will be understood by those skilled in the art that other variations and modifications of the structures and the embodiments describes above may be made without departing from the scope of the invention. Other structures and embodiments will be apparent to those skilled in the art from the descriptions of the specification, including the accompanying figures, or from practice of the invention disclosed herein. It is intended that the specification and described examples are illustrative with the true scope of the invention being defined by the following claims.

What is claimed is:

1. A communication system comprising:

a communication apparatus configured to communicate with a destination apparatus; and

an image processor configured to connect to the communication apparatus,

wherein the image processor comprises:

a supplying unit configured to supply image data to the communication apparatus; and

a notifying unit configured to transmit first additional information, comprising image processor source information that identifies the image processor, to the communication apparatus, and

wherein the communication apparatus comprises:

a memory configured to store second additional information comprising communication apparatus source information that identifies the communication apparatus;

an information generator configured to generate third additional information based on the second additional information stored in the memory and the first additional information received from the image processor, the third additional information including the first additional information and the second additional information when an indication is received that the first additional information and the second additional information are to be included in the third additional information; and

a transmitter configured to add the third additional information generated by the information generator to the image data supplied from the image processor and transmit the image data including the third additional information to the destination apparatus.

2. The communication system according to claim **1**,

wherein the image processor further comprises:

a first instruction transmitter configured to transmit first instruction information to the communication apparatus, wherein the first instruction information indicates whether the second additional information is to be included in the third additional information, and

wherein the information generator is configured to generate the third additional information including the first additional information without including the second additional information when the first instruction information transmitted from the first instruction transmitter indicates that the second additional information is not to be included in the third additional information.

3. The communication system according to claim **1**,

wherein the image processor further comprises:

a second instruction transmitter configured to transmit second instruction information to the communication apparatus, wherein the second instruction information indicates whether the first additional information is to be included in the third additional information, and

wherein the information generator is configured to generate the third additional information without including the first additional information when the second instruction information transmitted from the second instruction transmitter indicates that the first additional information is not to be included in the third additional information.

4. The communication system according to claim **1**,

wherein each of the first additional information and the second additional information indicates a source of the image data, and

wherein the information generator is configured to arrange the second additional information and the first additional information in the third additional information, such that the second additional information is arranged before the first additional information in the third additional information.

5. The communication system according to claim **1**,

wherein the information generator is configured to arrange the first additional information and the second additional information in the third additional information, such that the first additional information and the second additional information are arranged successively in the third additional information.

6. The communication system according to claim **1**,

wherein the memory stores a plurality of types of second additional information, and

wherein the information generator generates the third additional information comprising one type of second additional information selected from the plurality of types of second additional information in the third additional information.

7. The communication system according to claim **6**,

wherein the image processor further comprises:

a specified information transmitter configured to transmit specified information for selecting one type of second additional information from the plurality of types of second additional information to the communication apparatus, and

wherein the information generator includes the type of second additional information, which is selected based on the specified information transmitted from the specified information transmitter, in the third additional information.

8. The communication system according to claim 7,
wherein the image processor further comprises:
a specified information memory configured to store the specified information in association with identification information for identifying the destination apparatus, and
wherein the specified information transmitter of the image processor is configured to transmit the specified information stored in the specified information memory, which is associated with the identification information identifying the destination apparatus to which the image data is to be transmitted, to the communication apparatus.

9. The communication system according to claim 8,
wherein the specified information transmitter is configured to transmit predetermined specified information to the communication apparatus when the specified information, which corresponds to the identification information identifying the destination apparatus to which the image data is to be transmitted, is not stored in the specified information memory.

10. The communication system according to claim 7,
wherein the information generator generates the third additional information comprising predetermined second additional information when the specified information is not transmitted from the specified information transmitter.

11. The communication system according to claim 1,
wherein, when a redundant character string is included in a character string describing the first additional information and a character string describing the second additional information, the information generator is configured to generate the third additional information by combining the character string describing the first additional information with the character string describing the second additional information without the redundant character string.

12. A communication apparatus configured to communicate with a destination apparatus, the communication apparatus comprising:
an image data acquiring unit configured to acquire image data supplied from an image processor;
an additional information acquiring unit configured to acquire first additional information, comprising image processor source information that identifies the image processor, from the image processor;
a memory configured to store second additional information comprising communication apparatus source information that identifies the communication apparatus;
an information generator configured to generate third additional information based on the second additional information stored in the memory and the first additional information acquired by the additional information acquiring unit, the third additional information including the first additional information and the second additional information when an indication is received that the first additional information and the second additional information are to be included in the third additional information; and
a transmitter configured to add the third additional information generated by the information generator to the image data acquired by the image data acquiring unit and transmit the image data including the third additional information to the destination apparatus.

13. The communication apparatus according to claim 12,
wherein the communication apparatus is configured to receive first instruction information from the image processor indicating whether the second additional information is to be included in the third additional information, and
wherein the information generator generates the third additional information including the first additional information without including the second additional information when the first instruction information received from the image processor indicates that the second additional information is not to be included in the third additional information.

14. The communication apparatus according to claim 12,
wherein the communication apparatus is configured to receive second instruction information from the image processor indicating whether the first additional information is to be included in the third additional information, and
wherein the information generator generates the third additional information without including the first additional information when the second instruction information received from the image processor indicates that the first additional information is not to be included in the third additional information.

15. The communication apparatus according to claim 12,
wherein each of the first additional information and the second additional information indicates a source of the image data, and
wherein the information generator is configured to arrange the first additional information and the second additional information in the third additional information, such that the second additional information is arranged before the first additional information in the third additional information.

16. The communication apparatus according to claim 12,
wherein the information generator is configured to arrange the first additional information and the second additional information in the third additional information, such that the first additional information and the second additional information are arranged successively in the third additional information.

17. An image processor configured to connect to a communication apparatus that communicates with a destination apparatus, the image processor comprising:
a supplying unit configured to supply image data to the communication apparatus;
a notifying unit configured to transmit first additional information, comprising image processor source information that identifies the image processor, to the communication apparatus; and
a requesting unit configured to request the communication apparatus to:
add third additional information generated based on the first additional information transmitted from the image processor and second additional information, comprising communication apparatus source information that identifies the communication apparatus, stored in a memory of the communication apparatus to the image data, the third additional information including the first additional information and the second additional information when an indication is received that the first additional information and the second additional information are to be included in the third additional information, and
transmit the image data including the third additional information from the communication apparatus to the destination apparatus.

18. The image processor according to claim 17 further comprising:

a first instruction transmitter configured to transmit first instruction information to the communication apparatus, wherein the first instruction information indicates whether the second additional information is to be included in the third additional information.

19. The image processor according to claim **17** further comprising:

a second instruction transmitter configured to transmit second instruction information to the communication apparatus, wherein the second instruction information indicates whether the first additional information is to be included in the third additional information.

20. A communication system comprising:

a communication apparatus configured to communicate with a destination apparatus;

a first image processor configured to connect to the communication apparatus; and

a second image processor configured to connect to the communication apparatus,

wherein the first image processor comprises:

a first supplying unit configured to supply image data to the communication apparatus; and

a first notifying unit configured to transmit first additional information that identifies the first image processor to the communication apparatus,

wherein the second image processor comprises:

a second supplying unit configured to supply image data to the communication apparatus; and

a second notifying unit configured to transmit fourth additional information that identifies the second image processor, that is different from the first additional information, to the communication apparatus, and

wherein the communication apparatus comprises:

a memory configured to store second additional information that identifies the communication apparatus;

an information generator configured to generate third additional information,

wherein the third additional information includes the second additional information stored in the memory and the first additional information received from the first image processor in response to receiving the first additional information from the first image processor,

wherein the third additional information includes the second additional information stored in the memory and the fourth additional information received from the second image processor in response to receiving the fourth additional information from the second image processor; and

a transmitter configured to add the third additional information generated by the information generator to the image data supplied from the image processor and transmit the image data including the third additional information to the destination apparatus.

21. The communication system according to claim **20**,

wherein the second additional information includes a company name,

wherein the first additional information includes a department name, and

wherein the fourth additional information includes a department name that is different from the department name included in the first additional information.

22. The communication system according to claim **20**,

wherein the second additional information includes a family name,

wherein the first additional information includes a personal name, and

wherein the fourth additional information includes a personal name that is different from the personal name included in the first additional information.

* * * * *